TASK

What is Jenkins:

Jenkins is one of the most popular automation tool used worldwide for continuous integration and continuous delivery. Jenkins is a free and open-source automation server that enables developers to build, integrate, and test code automatically as soon as it is committed to the source repository

Why Jenkins:

When working on a project with different teams, developers often face issues with different teams using different CI tools, version management, and other tools. Setting up a CI/CD toolchain for each new project will lead to certain challenges like: • Slower Releases • Manual Builds • Non-repeatable processes • No Automations

Jenkins is the solution to those challenges. It provides: • Automated builds • Automated Tests • Automated CI/CD pipelines • Automated deployments • Ability to install Jenkins locally • Jenkins support and Plugins

Install Jenkins on Ubunt:

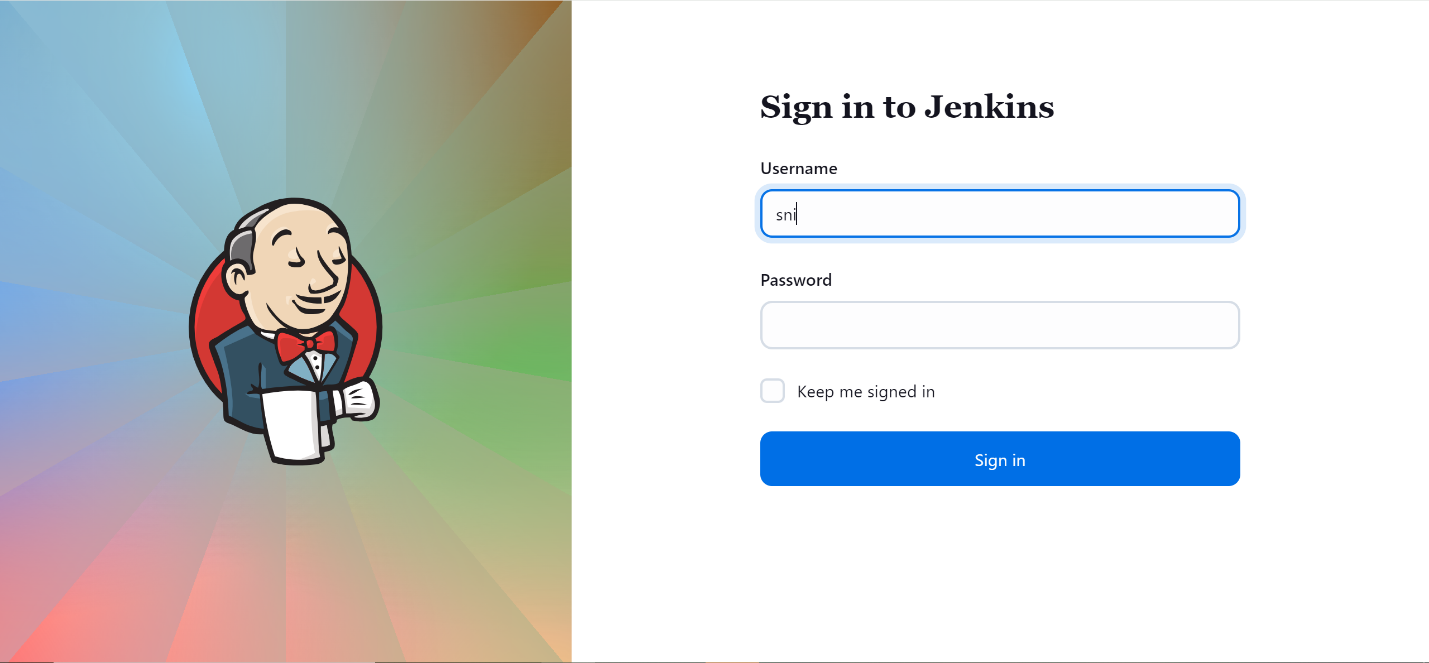
* apt update
* apt install latest java version
* sudo apt wget -q -O - https://pkg.jenkins.io/debianstable/jenkins.io.key | sudo apt-key add –
* $ sudo sh -c 'echo deb http://pkg.jenkins.io/debian-stable binary/ > /etc/apt/sources.list.d/jenkins.list’
* sudo systemctl start Jenkins
* sudo systemctl status Jenkins

Jenkins Plugins:

Plugins are used in Jenkins to enhance Jenkins functionality and cater to user-specific needs. Just like how Gmail, Facebook and LinkedIn help you connect your one service to another, plugins also work the same way and allow us to connect one service to other services and work with other products.

Create Admin User and Password for Jenkins:

Jenkins is initially configured to be secure on first launch. Jenkins can no longer be accessed without a username and password and open ports are limited. During the initial run of Jenkins a security token is generated and printed in the console log: \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Jenkins initial setup is required. A security token is required to proceed. Please use the following security token to proceed to installation: 41d2b60b0e4cb5bf2025d33b21cb \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* The install instructions for each of the platforms above includes the default location for when you can find this log output. This token must be entered in the "Setup Wizard" the first time you open the Jenkins UI. This token will also serve as the default password for the user 'admin' if you skip the user-creation step in the Setup Wizard.



Jenkins Jobs:

Different types of jobs that can be created in Jenkins:

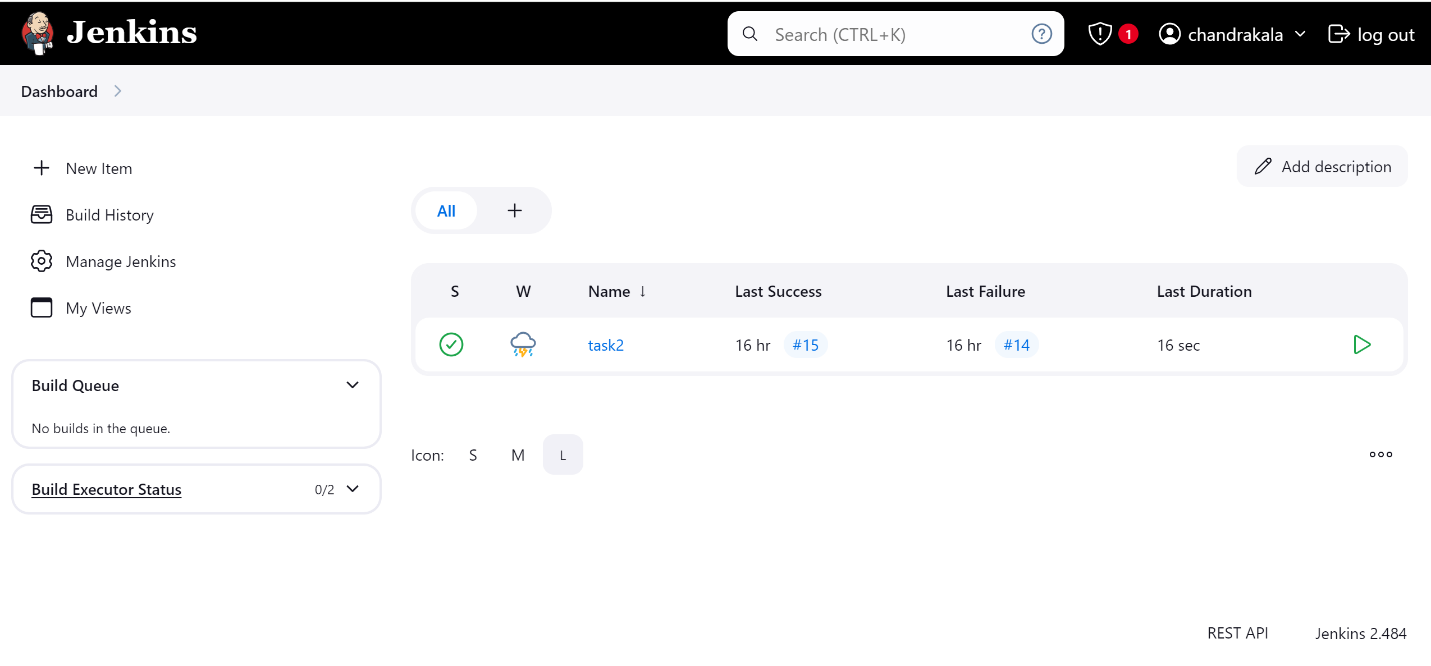
1) Freestyle project This is a central feature of Jenkins. It will build the project, combine SCM with the build system. It can also be used for things other than building applications.

2) Pipeline This is used to create a pipeline

3) Multi-configuration project This is great if you need a large number of Jenkins configurations if you need multiple environments like Dev/ UAT. 4) Folder This creates containers and stores nested items. It is useful in grouping, creating a namespace, etc.

5) Organisation folder Creates a multibranch project for all different subfolders that are available.

6) Multibranch Pipeline It sets up pipeline projects for different repositories.





**SonarQube**

* [SonarQube](https://www.sonarqube.org/) is an open source platform developed by SonarSource for continuous inspection of Code Quality
* SonarQube offers reports on duplicated code, coding standards, unit tests, bugs and security vulnerabilities

* SonarQube provides fully automated analysis and **integration with Maven** and Continuous **Integration tools like Jenkins**

* SonarQube is a Java application that requires a Java Runtime Environment.

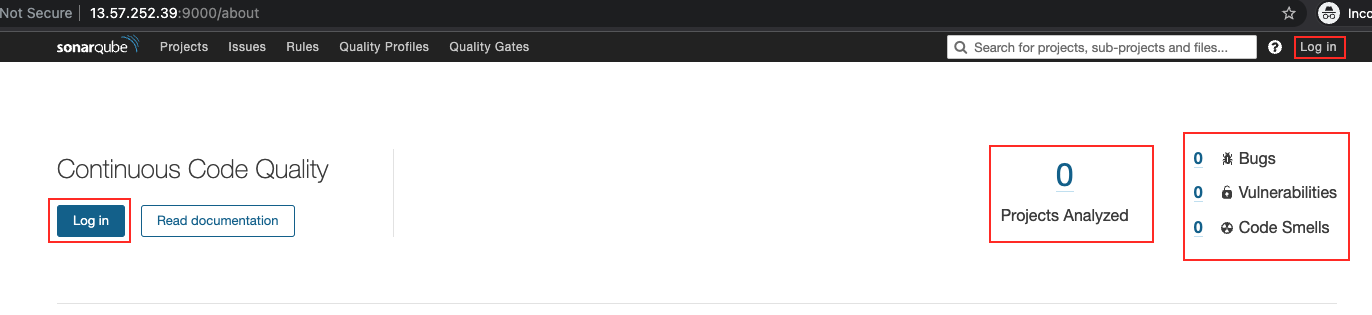
Quality Model

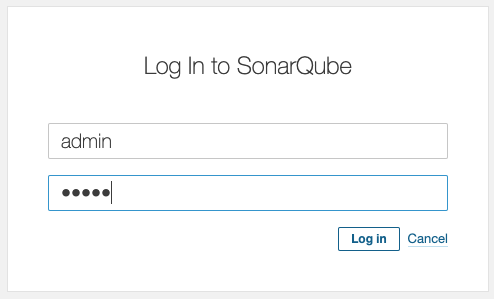
* **Bugs** track code that is demonstrably wrong or highly likely to yield unexpected behavior.
* **Vulnerabilities** are raised on code that is potentially vulnerable to exploitation by hackers.
* **Code Smells** will confuse maintainers or give them pause. They are measured primarily in terms of the time they will take to fix.
* SonarQube Requires “**t2.medium**” instance type to work

* SonarQube works on “**port 9000**”, make sure to add port 9000 as part of your Security Group

Sonar Installation:

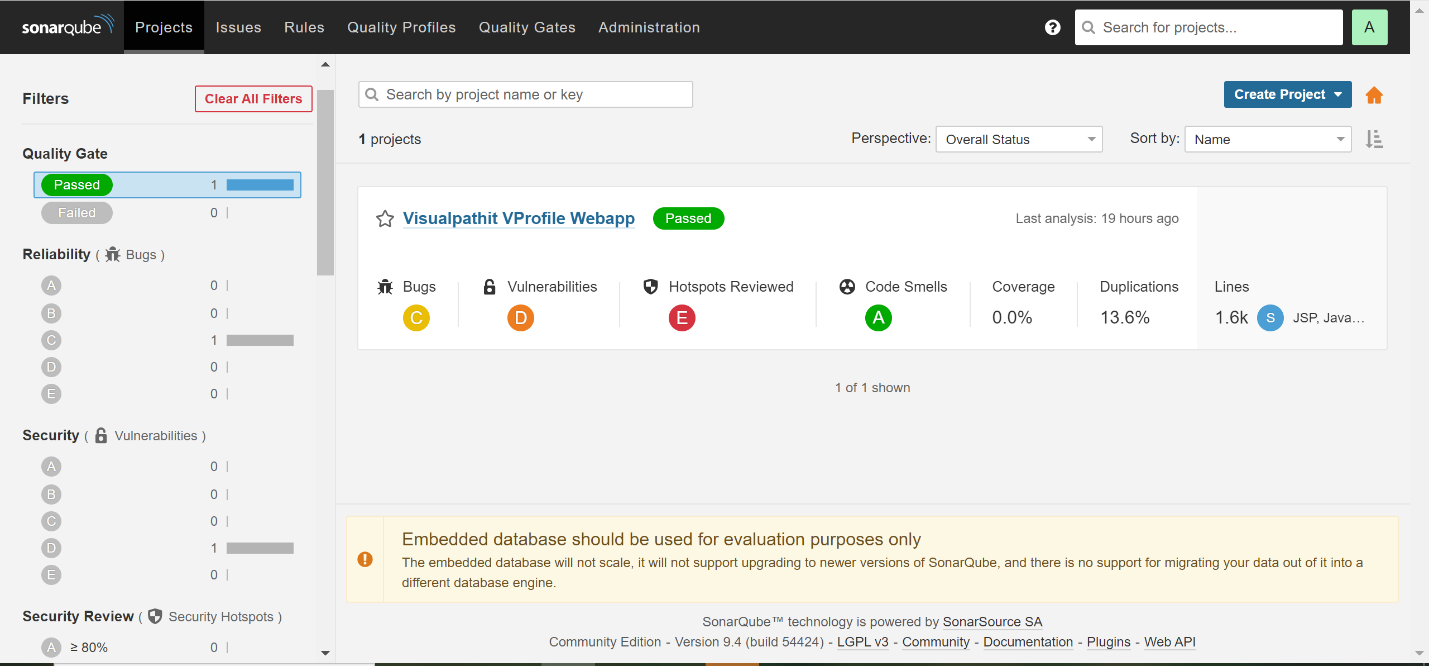
* Apt update -y
* Apt install java latest version
* Apt install unzip
* Adduser sonar
* Search binaries on google then select istribution then sonarqube in that you select th 9.4.54424.zip copy the link address
* You have to conver root user to sonar
* Wget past copied link address
* Then unzip the file
* Start the sonar





* Default Credentials for login
  + Username : **admin**

Password : **admin**



Nexus:

**Setting up Nexus**

* **Nexus** Repository Manager is a Java application that requires a **Java Runtime Environment**. When you run Nexus Repository Manager, you are running a server application with a web-based user interface. The application itself runs with the Jetty servlet container.
* Nexus Repository Manager can be downloaded from [Sonatype](http://www.mediafire.com/folder/svbvz61dzulef/packages). Distributions are available for the 64-bit versions for Apple OSX, Microsoft Windows and Unix/Linux. They contain all necessary resources to install and run the repository manager. You can download the archive file for your operating system of a specific release version.
* Downloaded archive is suitable for installation without a graphical user interface purely using command line-based interaction.

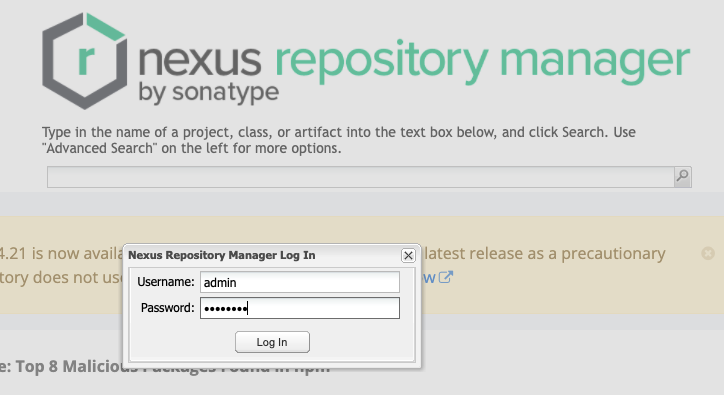
**Nexus Installation**

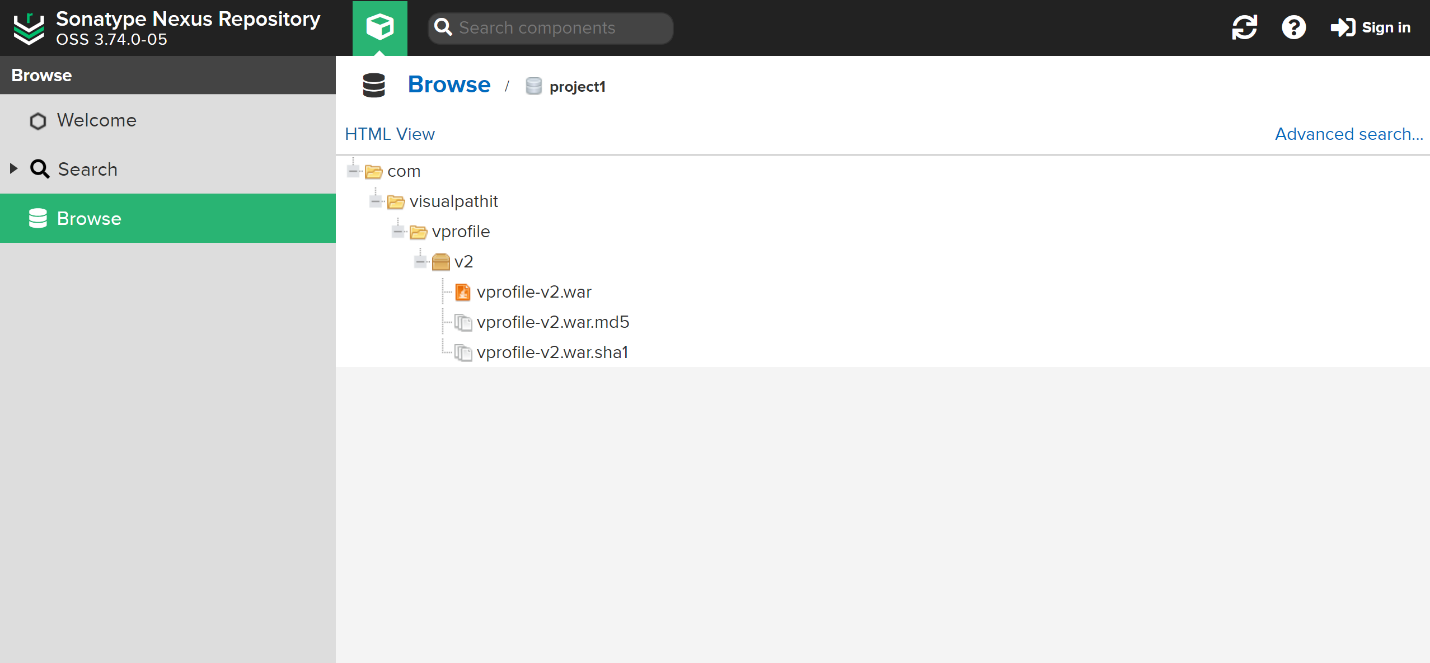
* Nexus Requires “**t2.medium**” instance type to work
* Nexus works on “**port 8081**”, make sure to add port 8081 as part of your Security Group
* Apt update -y
* Apt install java latest version
* > wget
* > sudo yum -y install wget
* > ls
* > wget <https://download.sonatype.com/nexus/oss/nexus-2.14.18-01-bundle.tar.gz>
* > ls
* > tar xvf nexus-2.14.18-01-bundle.tar.gz
* > ls
* Once the Nexus repository manager is started, By default port 8081 is used. To access the web application user interface, fire up a web browser and type in the URL [http://serveripaddress:port/nexus](about:blank)

* Browse **http://serveripaddress:port/nexus**

* The repository manager installation includes an administrative user with full access. Its username is admin and the password is admin123

* Default Credentials for login
  + Username : **admin**
  + Password : **admin123**





**Apache Tomcat**

* Apache Tomcat is an application server from the Apache Software Foundation that executes Java servlets and renders Web pages that include Java Server Page coding.

* Tomcat provides a **"pure Java" HTTP web server environment** in which Java code can run.

* Apache Tomcat basically make our Java Web applications to run on host and server based system and it is **configured on port 8080**

* There are two files to load and stop tomcat
  + startup.sh
  + shutdown.sh
* Important configuration files
  + server.xml and tomcat-users.xml

